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Ohio Timber Products Output—1989

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Abstract

The total industrial timber harvest in Ohio was over 89 million cubic feet in 1989. This was an 8 percent increase since 1983. Sawlogs accounted for 63 percent of the total and pulpwood accounted for 34 percent. During this 6-year period, sawlog production increased 20 percent to 382 million board feet. Ohio sawmills processed 379 million board feet of logs harvested in the state and an additional 151 million board feet of logs harvested in neighboring states. Pulpwood production reached 361,500 cords of roundwood and 267,100 cord equivalents of residue chips. Over 99 percent of the manufacturing residues produced at Ohio sawmills were used for either fiber, industrial fuel, agriculture, or other uses.

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Cover Photo.—A common practice at many Ohio sawmills is to sort out the best logs from those they buy, and resell them as veneer logs. These high quality logs will be resold to a veneer mill.

Contents

Study Method

The Forest Service of the U.S. Department of Agriculture periodically surveys the primary wood products industries to provide up-to-date information on the Nation's timber supply. This study of Ohio's 1989 output was conducted with the Ohio Department of Natural Resources, Division of Forestry. It updates a series of similar studies conducted by the Northeastern Forest Experiment Station and the Ohio Division of Forestry. Previous studies were conducted in 1966, 1973, 1978, and 1983. The information in this report was obtained by canvassing all primary wood-product manufacturers operating in Ohio during 1989. A list of firms was assembled by the Ohio Division of Forestry. The primary manufacturers were contacted initially by a mailed questionnaire. Probable out-of-state consumers of Ohio roundwood also received questionnaires. After three mailings, the mill owners in Ohio who did not respond were contacted by telephone or personal visit.

Background

The majority of Ohio's forests are on the western edge of the extensive Appalachian hardwood forest. The growth of timber in this region has exceeded harvesting for many years and the volume of standing timber is now at a level not seen since the turn of the century. In response to this increase in volume and a strong demand for hardwood lumber by both foreign and domestic markets, sawmills have increased their capacity throughout the region. In the last 10 years exports of hardwood lumber have more than tripled; similar studies conducted in Kentucky (1986) and West Virginia (1987) have recorded increases in sawlog harvests of 69 and 35 percent, respectively, over previous studies.

The most recent data for Ohio's timber resource shows that Ohio has 6.9 million acres of timberland (Dennis and Birch 1981). This represents 26 percent of the land area of the state. The timberland is predominantly privately owned (94 percent). The oak-hickory forest type is by far the dominant species association growing on these acres.

Historical Trends in Lumber Production

Ohio originally was approximately 95 percent forested. Land clearing for agriculture was extensive throughout the 1800's, tapering off about 1890. At that time, less than 20 percent of Ohio remained forested, most of the original forest having been disposed of by burning. Few products were produced from many of these virgin stands. Lumber production peaked around 1899 when close to a billion board feet were produced, then fell off quickly as available timber became scarce (Diller 1944). By 1904, lumber production had dropped to 421 million board feet. Production continued to fall to its lowest point in the mid-1930's when less than 200 million board feet were produced.

Total Harvest

The industrial roundwood harvest includes sawlogs, veneer logs, cooperage logs and bolts, pulpwood, and other wood used by primary wood processors. It does not include roundwood used for fuel. Almost 90 million cubic feet of wood were harvested from Ohio forests in 1989 (Fig. 1,

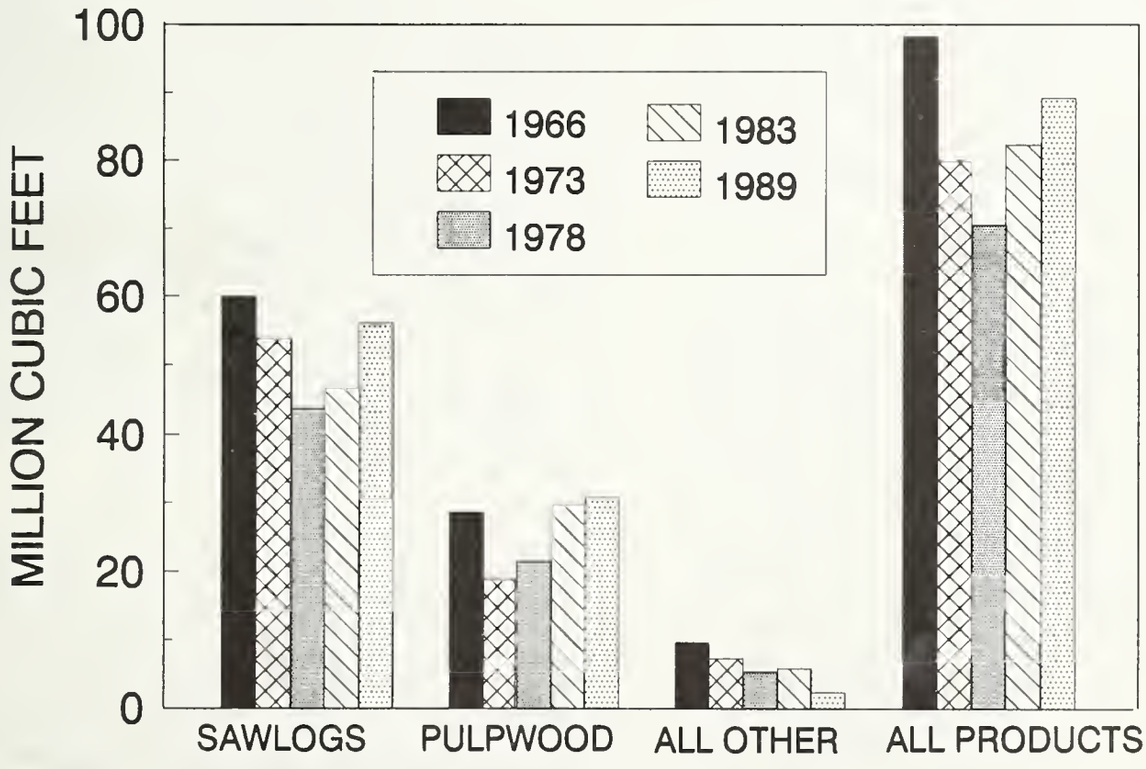


Figure 1.—Trends in Ohio timber harvest for selected years, by product.

Table 1). This includes 382.2 million board feet of sawlogs, 8.8 million board feet of veneer logs, 2.7 million board feet of cooperage logs and bolts, 361,500 cords of pulpwood and 636 thousand cubic feet of wood for all other miscellaneous products such as fencing. Most of the harvest for these products was hardwoods (97 percent). The small amount of softwoods harvested was primarily for pulpwood.

Data from previous surveys reveal that the harvest declined from 1966 through 1978 (Nevel and Redett 1980). Since 1978, total production has increased. For the period 1978 through 1983, the harvest increased 17 percent (Widmann and Long 1986). This was followed by an 8 percent increase for the period from 1983 through 1989. But still, production is below the level reached in 1966 (Table 2).

Most wood harvested in the state is delivered to sawmills. In 1989, 63 percent of the harvest was comprised of sawlogs, 34 percent pulpwood, 1 percent veneer and approximately 2 percent other products (Fig. 2). Until this most recent survey, the portion harvested for sawlogs had been declining. However, more recent data shows that the sawlog portion of the total harvest is now increasing.

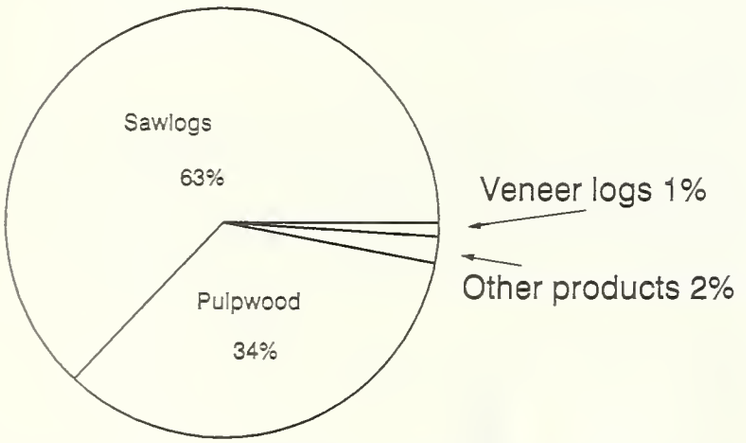


Figure 2.—Ohio timber harvest, 1989. Note: "Other products" includes cooperage, fencing, and miscellaneous products.

The South-Central, Southeastern, and East-Central Regions produce most of Ohio's timber (Fig. 3, Table 3). Seventy-six percent of the harvest takes place in these regions, which are also the most heavily forested part of the state. The harvest is also more intense in these regions. Putting the total annual harvest on a per-acre basis shows that, statewide, an average of approximately 13 cubic feet of wood is harvested per acre of timberland. In the South-Central and Southeastern Regions the harvest averages approximately 15 cubic feet per acre; and in the East-Central Region, approximately 14 cubic feet per acre. The harvest intensity was lower in the Northeastern Region where harvesting averaged 11 cubic feet per acre, and lowest in the Western Region where only 7 cubic feet were harvested per acre.

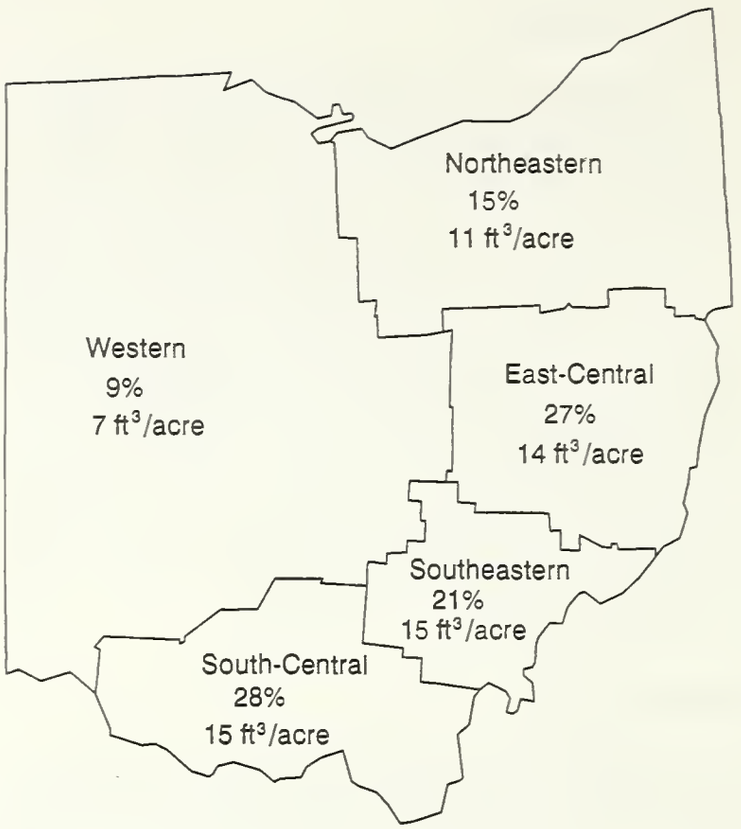


Figure 3.—Geographic units of Ohio, percent of total harvest and average cubic feet of wood harvested per acre of timberland in 1989.

Sawlogs

Sawlog production continued to rise in Ohio from 1983 through 1989. Production of sawlogs rose 20 percent during this period to reach 382.2 million board feet. A strong demand for hardwood lumber that resulted in rising hardwood lumber prices helped spur the harvest of sawlogs. During this period the average price paid for stumpage rose by 50 percent, or more, for oak species.

The majority of logs produced were from hardwood species, with less than 1 percent from softwoods. Ohio's hardwood sawlog harvest represents approximately 4 percent of the hardwood harvest for the entire country.

Oak species dominated the harvest with 84.8 million board feet of white oaks and 127.3 million board feet of red oaks cut (Fig. 4). Together, all species of oak comprised 55 percent of the total harvest. Other major species and their production are: yellow-poplar with 49.6 million board feet, ash with 30.8 million board feet, and sugar maple with 20.9 million board feet (Table 6). Of these major species yellow-poplar had the largest percentage increase (58 percent between 1983 and 1989).

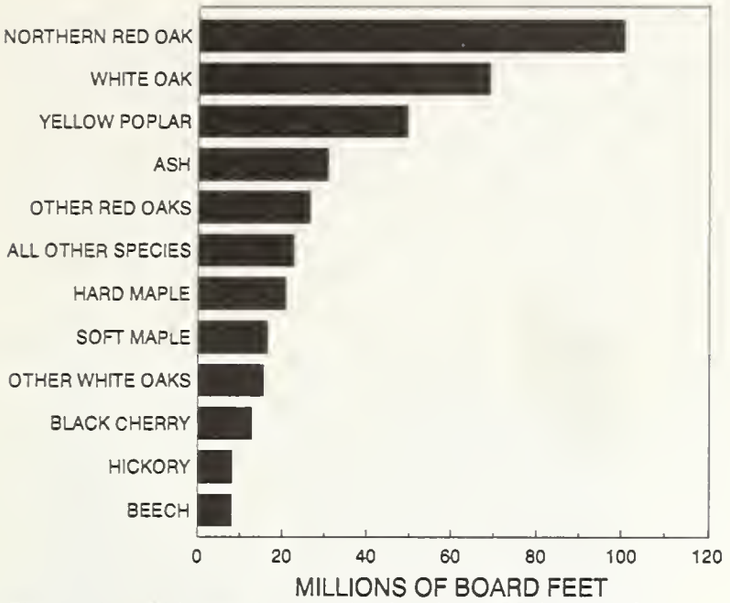


Figure 4.—Ohio sawlog production in 1989 by species.

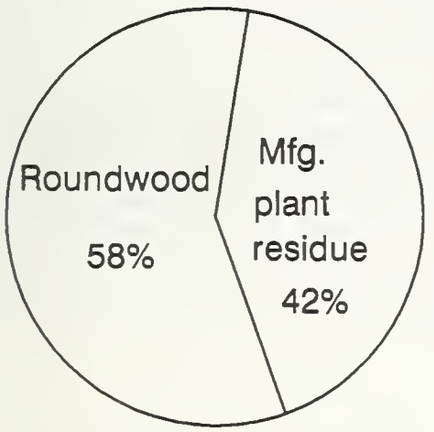
In 1989 receipts of sawlogs at Ohio's 219 operating sawmills totaled 530.3 million board feet (Table 4,5). This is a 41 percent increase since 1983. Importing logs from surrounding states was a significant factor in this increase since 28 percent of the sawlogs processed in Ohio came from outside the state. In 1989, 151.0 million board feet of logs were shipped into Ohio from surrounding states. West Virginia was the major source of these logs, shipping 109.3 million board feet to Ohio, followed by Pennsylvania with 23.5 million board feet, and Kentucky with 10.6 million board feet. Nearly two-thirds of sawlog shipments into the state were oak (Table 7).

The large amount of wood received by Ohio sawmills from surrounding states and the small amount of sawlogs harvested in Ohio and shipped out of state, resulted in Ohio's being a net importer of sawlogs. In 1989 only 2.9 million board feet of sawlogs were shipped to other states from Ohio. These states included Kentucky, Pennsylvania, and West Virginia. Ohio was a net importer of 148.1 million board feet in 1989.

The number of operating sawmills in Ohio continued to fluctuate as many sawmills changed owners or went out of business and new mills opened. The net change was a drop from 318 mills in 1983 to 219 mills in 1989. Most of the mills that closed were small. Expansion at medium and large mills resulted in an increase in the total mill capacity within the state. This explains some of the increase in the total volume processed. During this period the number of mills receiving over 1 million board feet of logs rose from 93 to 106. Of these 106 mills, 31 mills processed over 5 million board feet. This follows a general trend in the northern states where a larger portion of the timber harvest is being processed at large mills. A contributing factor to this trend in Ohio may be that larger mills can compete more effectively for logs than can small mills. This is especially true when buying logs from out-of-state sources, whose share of receipts has increased.

Pulpwood

Pulpwood is produced by harvesting roundwood from the forest and utilizing by-products from the milling of sawlogs into lumber. At most harvesting operations, wood that does not meet sawlog requirements is sold as pulpwood. This lower quality wood comes from the upper stem portion of sawlog-size trees and trees either too small in diameter or having too many defects for sawlog use. Sawmills also produce pulpwood chips from their slabs and edgings. In 1989, 57 percent of pulpwood production in Ohio came from roundwood and 43 percent came from manufacturing residues (Fig. 5, Widmann 1990).



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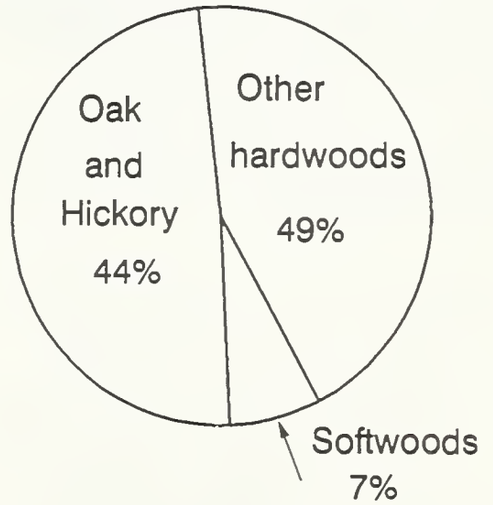
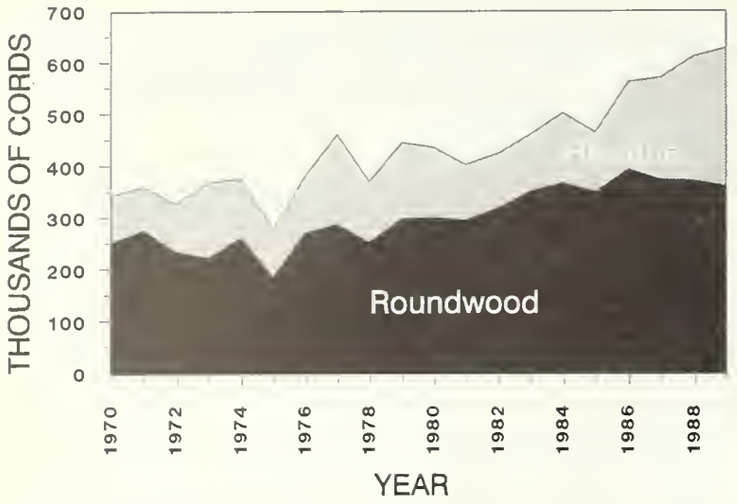


By species
(roundwood)

Figure 5.—Ohio pulpwood production in 1989.



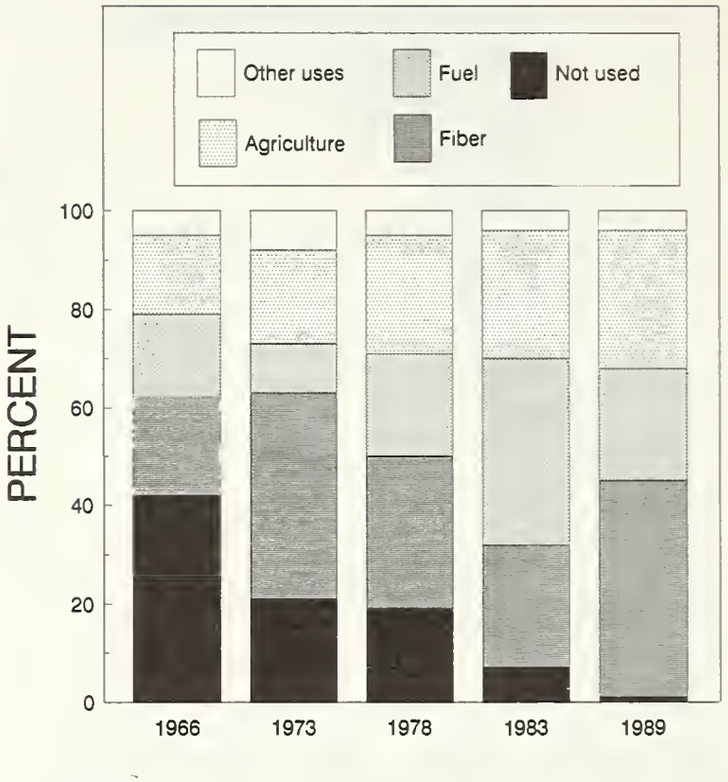


Figure 7.—Trends in manufacturing residue in Ohio.

Total pulpwood production and consumption reached new record highs in 1989 (Table 12) when roundwood and residue chips for pulp totaled 628,900 cords, and consumption of pulpwood at the four pulpmills in the state totaled 773,800 cords. Ohio was a net importer of 144,900 cords of pulpwood, the difference between production and consumption. In 1989 31,500 cords of pulpwood were shipped to out-of-state mills from Ohio and 176,400 cords were received from surrounding states.

The harvest of roundwood for pulp was 361,500 cords in 1989. This was a 3 percent increase since 1983 (Fig. 5). Roundwood production peaked in 1986 at 394,100 cords and has since gradually decreased (Fig. 6). This decrease is the result of chipped residues being substituted for roundwood as more logs are milled at Ohio sawmills. In 1989, 267,400 cords of pulpwood were produced from sawmill residues. This was one and a half times what was used in 1983. As the demand for pulpwood has increased, Ohio pulpmills have begun to rely more on sawmill residues as a raw material.

Veneer Log Production

Veneer log production in Ohio in 1989 was at least 8.7 million board feet (Table 10). This is the total wood that veneer mills in the United States and Canada reported receiving from Ohio. But we also found a considerable number of sawmills in the state sorting veneer logs out from the logs they purchased and reselling them to veneer log buyers. Sawmills reported reselling 5.5 million board feet to veneer mills, brokers, and foreign log buyers. It could not be determined how much of the resold 5.5 million board feet is already accounted for in the data received from veneer mills and how much actually went overseas.

It is also difficult to determine how much of the wood sold by sawmills was harvested in Ohio. As stated earlier, 28 percent of the sawlogs consumed in the state came from out of state, therefore, a large number of these logs probably originated in surrounding states. Of the logs sold by sawmills, 3.6 million board feet were white oak and 1.1 million board feet were red oak. There has been a strong demand for these species in overseas markets and a large portion of these oaks probably went to overseas markets. Logs shipped overseas would be in addition to the 8.7 million board feet reported in Table 10 for veneer harvested in Ohio.

Ohio remained a net importer of veneer logs in 1989. Imports into the state totaled 7.8 million board feet, while exports totaled 4.8 million board feet (Table 10, 11). This high volume in interstate shipments is an indicator of the value and demand for these logs. Veneer mills located hundreds of miles apart compete for logs. The different species and quality requirements of mills also encourages interstate shipment.

Cooperage

The Ohio production of white oak logs and bolts for cooperage continued to decline, although the receipts of logs by stave mills in the state rose sharply. Most logs for cooperage were harvested in surrounding states. Producers in West Virginia and Kentucky sold white oak cooperate logs in Ohio to profit from the higher prices.

Receipts of cooperage logs by Ohio mills increased 80 percent from 4.5 million board feet in 1983 to 8.1 million in 1989. This occurred while the harvest in Ohio declined 11 percent to 2.7 million board feet. All of the cooperage logs produced in Ohio were processed at Ohio mills. Additionally, these mills received 2.6 million board feet of white oak logs from Kentucky and 2.8 million board feet from West Virginia.

Mill Residues

Primary wood manufacturers produced over 51 million cubic feet of residues in the conversion of roundwood into lumber and other wood products. As a result of the large increase in logs processed in Ohio the production of residues such as bark, sawdust, and slabs and edging, increased 37 percent since 1983. Most were used for either fuel, agriculture, or fiber products such as paper, with approximately 1 percent unused. Unused residues usually are produced in small quantities and stored on site (Fig. 7). Recent changes in solid waste laws in Ohio have created concern about residue generated by the forest products industries (Passewitz and others 1990). The high rate of forest industry use of wood residues should moderate some of this concern.

Almost half the residues produced are course residues—the slabs, edging, and trimmings produced by sawmills. These residues are chipped and sold to pulpmills to provide an additional source of income for the sawmills. They also provide an alternative to roundwood for the pulpmills. In 1989, 87 percent of the coarse residues were converted to pulpwood and less than one-half percent were unused.

Summary

Ohio's primary wood-using industry remained strong since the previous 1983 study. Since then, the harvest of wood for all industrial products rose 8 percent and the receipts of wood by all major segments of the primary wood using industry (sawmills, veneer mills, pulpmills, and cooperage mills) increased. Most of the harvest was used for sawlogs (63 percent) or pulpwood (34 percent).

Ohio continued as a net importer of logs from surrounding states. All major segments of the industry rely to some extent on wood harvested in other states. Also, much of the recent increase in sawmilling capacity by large mills is based on wood imported into the state. The sawmills were the largest importer of logs: 28 percent of the logs consumed originated outside the state. A result of increased milling of logs was that residue chips for pulpwood were produced at record levels. These chips were used by pulpmills as an alternative to roundwood to the extent available.

Literature Cited

Dennis, Donald F.; Birch, Thomas W. 1981. **Forest statistics for Ohio—1979.** Resour. Bull. NE-68. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 79 p.

Diller, Oliver D. 1944. **Ohio's forest resources, progress report based on a survey conducted during 1939-1943 and a recommended long-range forestry program for Ohio.** For. Pub. N. 76. Wooster, OH. Agric. Exp. Stn. 109 p.

Nevel, Robert T., Jr.; Redett, Robert. 1980. **Assessment of timber output.** Resour. Bull. NE-64. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 33 p.

Passewitz, Gregory R.; Bratkovich, Stephen M.; Griessmann, Peter C.; Heimlich, Joe E. 1990. **Selected Ohio forest product industry residue.** Columbus, OH: Ohio Department of Natural Resources, Division of Forestry. 20 p.

Widmann, Richard H.; Long, Michael. 1986. **Ohio timber products output—1983.** Resour. Bull. NE-95. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 29 p.

Widmann, Richard H. 1990. **Pulpwood production in the Northeast—1988.** Resour. Bull. NE-116. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 26 p.

Appendix

Definition of Terms

Course residues. Manufacturing residues, suitable for chipping, such as slabs, edgings, and veneer cores.

Fine residues. Manufacturing residues not suitable for chipping, such as sawdust and shavings.

Geographic Unit. A group of counties large enough to provide reliable estimates:

a. *East-Central Region.* Belmont, Carroll, Coshocton, Guernsey Harrison, Holmes, Jefferson, Monroe, Muskingum, Noble, and Tuscarawas.

b. *Northeastern Region.* Ashland, Ashtabula, Columbiana, Cuyahoga, Erie, Geauga, Huron, Lake, Lorain, Mahoning, Medina, Portage, Richland, Stark, Summit, Trumbull, and Wayne.

c. *South-Central Region.* Adams, Brown, Clermont, Gallia, Highland, Jackson, Lawrence, Pike, Ross, and Scioto.

d. *Southeastern Region.* Athens, Hocking, Meigs, Morgan, Perry, Vinton, and Washington.

e. *Western Region.* Allen, Auglaize, Butler, Champaign, Clark, Clinton, Crawford, Darke, Defiance, Delaware, Fairfield, Fayette, Franklin, Fulton, Green, Hamilton, Hancock, Hardin, Henry, Knox, Licking, Logan, Lucas, Madison, Marion, Mercer, Miami, Montgomery, Morrow, Ottawa, Paulding, Pickaway, Preble, Putnam, Sandusky, Seneca, Shelby, Union, Van Wert, Warren, Williams, Wood, and Wyandot.

Harvest. The aggregate volume of timber produced for industrial or consumer uses.

Industrial timber harvest. Total production of round timber for conversion into wood products, except fuelwood.

Manufacturing residues. Wood materials, such as sawmill slabs and edgings, sawdust, veneer clippings and cores, post and pole trimming, and pulp screening generated from the manufacture of roundwood products.

Net growth. The change, resulting from natural causes, in growing-stock volume over a period of time. Components of net growth are ingrowth plus accretion minus mortality and cull increment.

Pulpwood. Roundwood, whole-tree chips, or manufacturing residues used for the production of woodpulp.

Roundwood products. Logs, bolts, total-tree chips, mine timbers, fenceposts, poles, and similar timber products generated by harvesting trees for industrial or consumer use.

Primary wood-manufacturing plant. A plant that converts roundwood to wood products such as woodpulp, lumber, veneer, cooperage, and dimension stock.

Roundwood receipts. The roundwood products, such as logs and bolts, received by primary wood-manufacturing plants for conversion into wood products.

Sawlog. A roundwood product, from which products such as lumber are sawn, and which meets certain minimum standards of diameter, length, and defect, including a minimum 8-foot length and combination of size and defect specified in regional standards.

Standard cord. A unit of measure for stacked bolts of wood, encompassing 128 cubic feet of wood, bark, and air space. In the Northeast, the measure refers to a stack of wood containing 85 cubic feet, or 2.41 cubic meters, of solid wood. A standard cord commonly is referred to as a cord, as in this report. This is not the same as a face cord, commonly used in firewood marketing.

Timberland. Forest land producing, or capable of producing, crops of industrial wood (more than 20 cubic feet per acre per year) and not withdrawn from timber utilization. Formerly known as commercial forest land.

Timber products output. Includes roundwood (round timber) products harvested from growing stock on commercial forest land; from other sources, such as cull trees, limbs and tops, and saplings; from trees on noncommercial and nonforest lands; and from manufacturing plant byproducts.

Unused manufacturing residues. Plant residues dumped or destroyed and not recovered for use.

Veneer log or bolt. A roundwood product from which veneer is sliced or sawn that usually meets certain minimum standards of diameter, length, and defect.

Conversion Factors

Softwood logs: Mbf (International ¼-inch rule) = 154.0 ft^3

Hardwood logs: Mbf (International ¼-inch rule) = 146.8 ft^3

On average, 1 board foot Doyle Rule = 1.258 board foot International ¼-inch rule. (based on an average log diameter of 15.4 inches and an average length of 11.2 feet).

Pulpwood: 1 standard cord = 85 ft^3 = 2.41 m^3

1 green ton aspen, yellow-poplar = 0.5263 cords

1 green ton oak-hickory = 0.3571 cords

1 green ton other hardwoods = 0.3846 cords

Index to Tables

Table 1.--Volume of industrial roundwood by product harvested, Ohio, 1989

Product	Standard unit	Softwood	Hardwood	All species
		Volume in standard units		
Sawlogs	M board feet[a]	2,331	379,911	382,242
Pulpwood	Standard cords[b]	26,200	335,300	361,500
Veneer logs	M board feet[a]	10	8,743	8,753
Cooperage	M cubic feet	-	2,740	2,740
Miscellaneous products[c]	M cubic feet	518	118	636
		Volume in cubic feet (thousands)		
Sawlogs		357	55,741	56,098
Pulpwood		2,227	28,500	30,727
Veneer logs		1	1,281	1,282
Cooperage		-	401	401
Miscellaneous products		518	118	636
Total		3,103	86,041	89,144
		Volume in cubic meters (thousands)		
Sawlogs		10.1	1,578.4	1,588.5
Pulpwood		63.1	808.1	871.2
Veneer logs		-	36.3	36.3
Cooperage		-	11.3	11.3
Miscellaneous products		14.7	3.3	18.0
Total		87.9	2,437.4	2,525.3

[a]International 1/4-inch rule, M indicates thousand.
[b]Rough-wood basis equivalent to 85 cubic feet of solid wood.
[c]Includes fencing, and other miscellaneous products.

Table 2.--Change in timber products output, Ohio, 1966-89

Product	1966	1973	1978[a]	1983	1989	Percent Change '83-'89
	Thousand cubic feet[b]					
Sawlogs	59,960	53,858	43,702	46,735	56,098	+20
Pulpwood	28,619	18,937	21,403	29,826	30,727	+ 3
Veneer logs	1,032	786	1,133	1,376	1,282	- 7
Cooperage logs	1,697	933	1,033	454	401	-12
Misc. products	6,956	5,487	3,202	3,907	636	-84
Total	98,264	80,001	70,473	82,298	89,144	+ 8

[a] 1978 sawlog totals are based on the 1983 conversion factor.
[b] International 1/4-inch rule.

Table 3.--Industrial timber harvest[a] by geographic unit, softwoods and hardwoods, and products, Ohio, 1989

(In thousands of cubic feet)

Geographic unit and species group	Sawlogs	Pulpwood	Other products[b]	All products
South-Central				
Softwoods	30	790	51	871
Hardwoods	10,340	12,920	440	23,700
Total	10,370	13,710	491	24,571
Southeastern				
Softwoods	208	1,063	456	1,727
Hardwoods	12,214	4,658	400	17,272
Total	12,422	5,721	856	18,999
East-Central				
Softwoods	20	366	12	398
Hardwoods	15,462	7,709	220	23,391
Total	15,482	8,075	232	23,789
Northeastern				
Softwoods	11	8	-	19
Hardwoods	11,334	2,185	190	13,709
Total	11,345	2,193	190	13,728
Western				
Softwoods	88	-	-	88
Hardwoods	6,391	1,028	550	7,969
Total	6,479	1,028	550	8,057
All units				
Softwoods	357	2,227	519	3,103
Hardwoods	55,741	28,500	1,800	86,041
Total	56,098	30,727	2,319	89,144

[a] Does not include fuelwood or removals that were not manufactured into industrial products.

[b] Includes guardrails, metallurgical wood, poles, posts, and roundwood chips used for molded pallets.

Table 4.--Number of operating sawmills and annual production class, Ohio, 1973, 1978, 1983, and 1989

Year	Production class[a]			
	More than 1 million board feet	Between 100 thousand and 1 million board feet	Less than 100 thousand board feet	Total
1973	86	122	102	310
1978	120	108	98	326
1983	93	106	119	318
1989	106*	70	43	219

[a]Based on sawlog receipts.
*31 of these mills received over 5 million board feet.

Table 5.--Sawlog production and receipts by geographic unit, Ohio, 1978, 1983, and 1989

(Million board feet)[a]

Geographic unit	Production				Receipts			
	1978[a]	1983	1989	Percent change 1983-1989	1978	1983	1989	Percent change 1983-1989
South-Central	78.8	73.1	70.5	- 4	85.1	72.9	75.7	+ 4
Southeastern	51.0	51.6	84.6	+64	66.8	86.2	199.1	+131
East-Central	70.7	86.2	105.7	+23	75.0	89.7	119.1	+ 33
Northeastern	39.0	62.2	77.3	+24	44.5	77.8	89.8	+ 15
Western	57.7	45.2	44.1	- 2	44.5	49.9	46.6	- 7
All units	297.2	318.3	382.2	+20	315.9	376.5	530.3	+ 41

[a]International 1/4-inch rule.

Table 6.--Production of sawlogs by species and destination of shipments, Ohio, 1989

(Million board feet)[a]

Species	Cut and retained in state	Exported to:			Total export	Total production
		Kentucky	Pennsylvania	West Virginia		
Pine	1.8	-	-	-	-	1.8
Other softwoods	.3	0.1	0.1	-	0.2	.5
Total softwoods	2.1	0.1	0.1	-	0.2	2.3
Ash	30.6	*	0.2	*	0.2	30.8
Aspen	2.4	-	-	-	-	2.4
Basswood	1.9			*	*	1.9
Beech	8.2	-	-	*	*	8.2
Black cherry	12.8	-	.1	-	.1	12.9
Elm	3.7	-	-	*	*	3.7
Hickory	8.2	-	.1	*	.1	8.3
Black locust	.6	-	-	-	-	.6
Hard maple	20.6	-	.3	*	.3	20.9
Soft maple	16.4	*	.2	*	.2	16.6
White oak	68.8	0.1	-	.2	.3	69.1
Other white oak	15.5	-	-	.2	.2	15.7
Northern red oak	100.0	-	.5	.2	.7	100.7
Other red oaks	26.4	*	-	.2	.2	26.6
Sycamore	2.5	-	-	-	-	2.5
Black walnut	6.7	.2	-	-	.2	6.9
Yellow-poplar	49.5	-	*	.1	.1	49.6
Other hardwoods	2.4	-	-	.1	.1	2.5
Total hardwoods	377.2	0.3	1.4	1.0	2.7	379.9
Total all species	379.3	0.4	1.5	1.0	2.9	382.2

[a]International 1/4-inch rule.
*Less than 50,000 board feet.

Table 7.--Consumption of sawlogs by species and source of shipments, Ohio, 1989

(Million board feet)[a]

Species	Cut and retained in state	Imported from:						Total imports	Total consumption
		Indiana	Kentucky	Michigan, Minnesota	Pennsylvania	Tennessee	Virginia		
Pine	1.8	-	-	-	-	-	0.1	0.1	1.9
Other softwoods	.3	-	0.1	-	-	-	-	.1	.4
Total softwoods	2.1	-	0.1	-	-	-	0.1	0.2	2.3
Ash	30.6	0.7	1.3	0.1	1.2	0.1	4.6	8.0	38.6
Aspen	2.4	*	-	*	-	-	.1	.1	2.5
Basswood	1.9	*	*	*	.1	-	.5	.6	2.5
Beech	8.2	*	*	*	.6	-	2.2	2.8	11.0
Black cherry	12.8	*	.2	*	1.6	.1	2.5	4.4	17.2
Elm	3.7	*	*	-	.4	-	.4	.8	4.5
Hickory	8.2	.1	.1	*	.5	-	2.0	2.7	10.9
Black locust	.6	-	-	-	-	-	*	*	.6
Hard maple	20.6	.2	.4	*	1.9	-	3.6	6.1	26.7
Soft maple	16.4	.1	.2	*	2.0	-	2.7	5.0	21.4
White oak	68.8	.5	2.4	.1	3.7	.3	25.3	32.3	101.1
Other white oak	15.5	.5	1.2	.1	.1	.3	3.4	5.6	21.1
Northern red oak	100.0	1.3	1.7	.2	7.9	.1	40.0	51.2	151.2
Other red oaks	26.4	.2	1.5	-	1.0	1.0	5.1	8.8	35.2
Sycamore	2.5	.1	-	*	*	-	.3	.4	2.9
Black walnut	6.7	1.2	.3	.1	.1	-	.8	2.5	9.2
Yellow-poplar	49.5	.1	1.2	*	2.4	.1	15.7	19.5	69.0
Other hardwoods	2.4	-	*	-	*	-	-	*	2.4
Total hardwoods	377.2	5.0	10.5	0.6	23.5	2.0	109.2	150.8	528.0
Total all species	379.3	5.0	10.6	0.6	23.5	2.0	109.3	151.0	530.3

[a]International 1/4-inch rule.

*Less than 50,000 board feet.

Table 8.--Production of sawlogs by species and geographic unit, Ohio, 1989

(Million board feet)[a]

Species	South-Central	Southeastern	East-Central	Northeastern	Western	Total
Pine	0.1	1.2	-	-	0.5	1.8
Other softwoods	.1	.1	0.1	0.1	.1	.5
Total softwoods	0.2	1.3	0.1	0.1	0.6	2.3
Ash	4.6	5.2	8.1	6.4	6.5	30.8
Aspen	.2	.5	.7	.4	.6	2.4
Basswood	.3	.4	.4	.6	.2	1.9
Beech	1.1	2.1	2.2	2.4	.4	8.2
Black cherry	.8	2.2	3.7	5.2	1.0	12.9
Elm	.2	.7	1.5	.9	.4	3.7
Hickory	1.8	2.0	2.3	1.5	.7	8.3
Black locust	*	*	.1	.3	.2	.6
Hard maple	4.0	3.8	4.8	5.9	2.4	20.9
Soft maple	2.7	2.8	3.2	6.5	1.4	16.6
White oak	14.9	16.3	18.9	9.4	9.6	69.1
Other white oak	3.3	4.3	4.3	1.6	2.2	15.7
Northern red oak	17.4	22.7	28.3	21.0	11.3	100.7
Other red oaks	5.4	6.3	8.1	5.1	1.7	26.6
Sycamore	.9	.4	.5	.2	.5	2.5
Black walnut	1.1	.6	2.5	1.5	1.2	6.9
Yellow-poplar	11.4	12.7	15.4	7.3	2.8	49.6
Other hardwoods	.2	.3	.5	1.1	.4	2.5
Total hardwoods	70.3	83.3	105.5	77.3	43.5	379.9
Total all species	70.5	84.6	105.6	77.4	44.1	382.2

[a]International 1/4-inch rule.
*Less than 50,000 board feet.

Table 9.--Consumption of sawlogs by species and geographic unit, Ohio, 1989

(Million board feet)[a]

Species	South-Central	Southeastern	East-Central	Northeastern	Western	Total
Pine	0.1	1.3	-	*	0.5	1.9
Other softwoods	.2	.1	0.1	-	*	.4
Total softwoods	0.3	1.4	0.1	*	0.5	2.3
Ash	3.5	10.0	8.4	7.4	9.2	38.5
Aspen	*	1.1	.5	.5	.5	2.6
Basswood	.2	1.2	.2	.6	.3	2.5
Beech	.7	4.6	2.5	2.7	.5	11.0
Black cherry	1.3	3.3	4.6	7.5	.5	17.2
Elm	.2	1.1	2.0	1.0	.2	4.5
Hickory	1.7	3.8	2.9	1.9	.6	10.9
Black locust	-	*	.1	.4	.1	.6
Hard maple	3.3	8.9	4.5	7.5	2.5	26.7
Soft maple	2.1	7.1	2.9	8.2	1.1	21.4
White oak	17.6	43.2	20.4	10.7	9.2	101.1
Other white oak	4.5	9.5	2.6	1.2	3.3	21.1
Northern red oak	18.9	58.4	36.6	24.9	12.4	151.2
Other red oaks	8.2	10.8	9.3	5.8	1.1	35.2
Sycamore	.7	.9	.5	.2	.6	2.9
Black walnut	2.5	1.3	1.9	.8	2.7	9.2
Yellow-poplar	10.0	32.2	18.7	7.2	.9	69.0
Other hardwoods	*	.3	.4	1.3	.4	2.4
Total hardwoods	75.4	197.7	119.0	89.8	46.1	528.0
Total all species	75.7	199.1	119.1	89.8	46.6	530.3

[a]International 1/4-inch rule.
*Less than 50,000 board feet.

Table 10.--Veneer log production in Ohio, by species and consuming state, 1989

(Thousand board feet)[a]

Species	Cut and retained in state	Exported to:					Total production
		Indiana	Kentucky	Michigan	West Virginia	Canada	
Pine	-	-	-	10	-	*	10
Other softwoods	-	-	-	*	-	*	*
Total softwoods	-	-	-	10	-	*	10
Ash	39	119	-	13	-	18	189
Aspen	22	-	-	-	-	-	22
Basswood	-	-	-	-	-	-	-
Beech	68	-	-	-	-	-	68
Black cherry	17	19	-	47	-	30	113
Elm	24	7	-	9	-	5	45
Hickory	1	67	-	-	-	11	79
Black locust	-	-	-	-	-	-	-
Hard maple	844	20	-	2	-	11	877
Soft maple	86	68	-	-	-	-	154
White oak	1,903	710	17	485	727	158	4,000
Other white oak	-	58	-	-	-	-	58
Northern red oak	450	678	52	55	-	579	1,814
Other red oaks	-	-	-	-	-	-	-
Sycamore	84	-	-	-	-	-	84
Black walnut	261	692	58	28	-	44	1,083
Yellow-poplar	137	-	-	-	-	-	137
Other hardwoods	14	1	-	5	-	-	20
Total hardwoods	3,950	2,439	127	644	727	856	8,753
Total all species	3,950	2,439	127	654	727	856	8,753

[a]International 1/4-inch rule.
*Less than 50,000 board feet.

Table 11.--Veneer log receipts in Ohio, by species and producing state, Ohio, 1989

(Thousand board feet)[a]

Species	Cut and retained in state	Imported from:							Total receipts
		Indiana	Kentucky	Michigan	Pennsylvania	New York	West Virginia	Other states	
Pine	-	-	-	-	-	-	-	77	77
Total softwoods	-	-	-	-	-	-	-	77	77
Ash	39	18	-	54	-	-	32	16	159
Aspen	22	-	-	-	-	-	-	-	22
Basswood	-	-	-	-	-	-	-	-	-
Beech	68	-	-	-	-	-	-	-	68
Black cherry	17	8	-	97	-	392	-	1	515
Elm	24	-	-	-	-	-	-	8	32
Hickory	1	-	-	-	-	-	-	49	50
Black locust	-	-	-	-	-	-	-	-	-
Hard maple	844	195	-	1,693	930	1,069		11	4,742
Soft maple	86	-	-	-	-	-	-	-	86
White oak	1,903	423	529	102	-	132	266	178	3,533
Other white oak	-	-	-	-	-	-	-	-	-
Northern red oak	450	240	124	581	-	159	63	31	1,648
Other red oaks	-	-	-	-	-	-	-	-	-
Sycamore	84	-	-	-	-	-	-	-	84
Black walnut	261	140	-	82	-	-	-	179	662
Yellow-poplar	137	-	-	-	-	-	-		137
Other hardwoods	14	-	-	-	-	-	-	-	14
Total hardwoods	3,950	1,024	653	2,609	930	1,752	361	473	11,752
Total all species	3,950	1,024	653	2,609	930	1,752	361	550	11,829

[a]International 1/4-inch rule.

Table 12.--Pulpwood production, by source, Ohio, 1965-89

(In thousands of rough cords)

Year	Roundwood	Manufacturing residues	All sources
1965	272.5	40.6	313.1
1966	336.7	38.8	375.5
1967	281.1	54.9	336.0
1968	232.6	33.5	266.1
1969	230.9	68.5	299.4
5-year average	270.8	47.3	318.0
1970	251.8	92.0	343.8
1971	276.0	84.1	360.1
1972	233.8	94.1	327.9
1973	222.8	146.5	369.3
1974	261.2	115.6	376.8
5-year average	249.1	106.5	355.6
1975	185.7	93.4	279.1
1976	270.3	112.7	383.0
1977	286.7	175.6	462.3
1978	251.8	119.8	371.6
1979	296.9	149.5	446.4
5-year average	258.3	130.2	388.5
1980	299.6	137.1	436.7
1981	293.8	109.1	402.9
1982	317.4	107.5	424.9
1983	350.9	110.9	461.8
1984	366.7	136.0	502.7
5-year average	325.7	120.1	445.8
1985	350.1	115.7	465.8
1986	394.1	168.9	563.0
1987	372.6	198.2	570.8
1988	373.0	239.1	612.1
1989	361.5	267.1	628.6
5-year average	370.7	197.8	568.1

Table 13.--Pulpwood harvest, by softwoods and hardwoods, and geographic unit, Ohio, 1975-89

(In thousands of rough cords)

Species group and geographic unit	1975	1976	1977	1978	1979	1980	1981	1982
Softwoods								
South-Central	1.7	1.5	1.2	1.0	0.5	0.1	-	-
Southeastern	.7	2.3	1.4	.6	-	.3	-	1.2
East-Central	-	-	-	-	-	-	-	-
Northeastern	1.9	2.5	2.4	2.8	1.7	-	-	-
Western	-	-	-	-	-	-	-	-
Total softwoods	4.3	6.3	5.0	4.4	2.2	0.4	-	1.2
Hardwoods								
South-Central	171.5	122.3	119.5	102.5	106.9	112.4	122.2	134.6
Southeastern	44.8	65.1	82.7	78.8	116.0	95.6	90.0	89.4
East-Central	51.2	60.1	56.4	48.5	59.9	63.8	60.4	70.8
Northeastern	1.9	2.4	2.6	3.1	6.8	8.4	9.0	12.9
Western	12.0	14.1	20.5	14.5	5.1	19.0	12.2	8.5
Total hardwoods	181.4	264.0	281.7	247.4	294.7	299.2	293.8	316.2
All species	185.7	270.3	286.7	251.8	296.9	299.6	293.8	317.4

Species group and geographic unit	1983	1984	1985	1986	1987	1988	1989	All years
Softwoods								
South-Central	-	-	-	8.4	23.0	14.4	9.3	61.1
Southeastern	1.1	1.5	1.7	7.2	16.4	9.3	12.5	56.2
East-Central	-	-	-	1.5	4.1	9.1	4.3	19.0
Northeastern	-	-	-	-	-	1.3	.1	12.7
Western	-	-	-	.8	-	-	-	.8
Total softwoods	1.1	1.5	1.7	17.9	43.5	34.1	26.2	149.8
Hardwoods								
South-Central	183.3	168.9	176.5	184.0	126.2	168.8	152.0	2,151.6
Southeastern	90.8	92.4	46.7	71.7	87.1	47.9	54.8	1,153.8
East-Central	64.9	79.0	83.6	103.3	101.0	84.8	90.7	1,078.4
Northeastern	226.5	23.2	3.8	6.4	12.5	34.6	25.7	379.8
Western	4.8	1.7	37.8	10.8	2.3	2.8	12.1	178.2
Total hardwoods	349.8	365.2	348.4	376.2	329.1	338.9	335.3	4,621.3
All species	350.9	366.7	350.1	394.1	372.6	373.0	361.5	4,771.1

Table 14.--White oak cooperage log and bolt production and receipts and number of operating plants in Ohio, for selected years 1958-89

(In thousands of board feet)[a]

Year	Number of plants	Production	Receipts
1958	4	8,579	8,600
1960	11	13,598	14,735
1962	10	12,427	12,654
1964	12	16,000	17,303
1966	7	11,000	12,838
1973	7	6,372	8,210
1978	4	7,037	8,780
1983	4	3,093	4,480
1989	4	2,740	8,083

[a]International 1/4-inch rule.

Table 15.--Production and distribution of hardwood manufacturing residues by type of residue, type of use, and source, Ohio, 1989

(In thousands of cubic feet)

Disposition	Type of residue			All types
	Bark	Coarse[a]	Fine[b]	
		LUMBER[c]		
Fiber[d]	70	21,136	757	21,963
Industrial fuel	661	1,002	7,957	9,620
Domestic fuel	304	718	53	1,075
Agriculture[e]	7,298	540	5,594	13,432
Other[f]	1,175	259	196	1,630
Total, used	9,508	23,655	14,557	47,720
Unused	139	64	117	320
		OTHER INDUSTRIES[g]		
Fiber	13	552	201	766
Industrial fuel	50	445	392	887
Domestic fuel	49	93	-	142
Agriculture	364	28	531	923
Other	81	119	52	252
Total, used	557	1,237	1,176	2,970
Unused	2	36	17	55
		ALL INDUSTRIES		
Fiber	83	21,688	958	47,999
Industrial fuel	711	1,447	8,349	10,507
Domestic fuel	353	811	53	1,217
Agriculture	7,662	568	6,125	14,355
Other	1,256	378	248	1,882
Total, used	10,065	24,892	15,733	50,690
Unused	141	100	134	375

[a]Includes slabs, edgings, trimmings, veneer cores, and other material suitable for chipping.
[b]Includes sawdust, shavings, and other material considered unsuitable for chipping.
[c]Includes lumber products sawn from sawlogs and boltwood.
[d]Includes woodpulp and composite products.
[e]Includes livestock bedding and farm and horticultural mulch.
[f]Includes miscellaneous uses such as small-dimension and speciality items.
[g]Includes veneer, cooperage, and fencing timbers; excludes the woodpulp industry.

Widmann, Richard H.; Long, Michael. **Ohio timber product output—1989.** Resour. Bull. NE-121. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 21 p.

This periodic report contains 1989 information compiled from a canvass of all primary manufacturers that use roundwood harvested in Ohio. In 1989, 89 million cubic feet of roundwood was harvested in Ohio. Included in this figure is 382 million board feet of sawlogs and 361,500 cords of wood used for pulpwood.

Keywords: wood residue use, Ohio manufacturers, production statistics, sawlogs, pulpwood

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